

seated in the driving seat. Its emergency position or method of operation shall be clearly indicated. In no instance may the manual means be so arranged as to permit its use to prevent operation of the automatic means. The automatic and manual means required by this section may be, but are not required to be, separate.

(c) *Emergency brake requirements, vacuum brakes.* Every truck tractor and truck when used for towing other vehicles equipped with vacuum brakes, shall have, in addition to the single control required by § 393.49 to operate all brakes of the combination, a second manual control device which can be used to operate the brakes on the towed vehicles in emergencies. Such second control shall be independent of brake air, hydraulic, and other pressure, and independent of other controls, unless the braking system be so arranged that failure of the pressure on which the second control depends will cause the towed vehicle brakes to be applied automatically. The second control is not required by this rule to provide modulated or graduated braking.

(d) *Breakaway braking requirements for trailers.* Every trailer required to be equipped with brakes shall have brakes which apply automatically and immediately upon breakaway from the towing vehicle. With the exception of trailers having three or more axles, all brakes with which the trailer is required to be equipped must be applied upon breakaway from the towing vehicle. The brakes must remain in the applied position for at least 15 minutes.

(e) *Emergency valves.* Air brake systems installed on towed vehicles shall be so designed, by the use of "no-bleed-back" relay emergency valves or equivalent devices, that the supply reservoir used to provide air for brakes shall be safeguarded against backflow of air to the towing vehicle upon reduction of the towing vehicle air pressure.

(f) *Exception.* The requirements of paragraphs (b), (c) and (d) of this section shall not be applicable to commercial motor vehicles being transported in driveaway-towaway operations.

[53 FR 49384, Dec. 7, 1988, as amended at 70 FR 48050, Aug. 15, 2005]

§ 393.44 Front brake lines, protection.

On every bus, if equipped with air brakes, the braking system shall be so constructed that in the event any brake line to any of the front wheels is broken, the driver can apply the brakes on the rear wheels despite such breakage. The means used to apply the brakes may be located forward of the driver's seat as long as it can be operated manually by the driver when the driver is properly restrained by any seat belt assembly provided for use. Every bus shall meet this requirement or comply with the regulations in effect at the time of its manufacture.

[53 FR 49400, Dec. 7, 1988]

§ 393.45 Brake tubing and hoses; hose assemblies and end fittings.

(a) *General construction requirements for tubing and hoses, assemblies, and end fittings.* All brake tubing and hoses, brake hose assemblies, and brake hose end fittings must meet the applicable requirements of FMVSS No. 106 (49 CFR 571.106).

(b) *Brake tubing and hose installation.* Brake tubing and hose must—

(1) Be long and flexible enough to accommodate without damage all normal motions of the parts to which it is attached;

(2) Be secured against chaffing, kinking, or other mechanical damage; and

(3) Be installed in a manner that prevents it from contacting the vehicle's exhaust system or any other source of high temperatures.

(c) *Nonmetallic brake tubing.* Coiled nonmetallic brake tubing may be used for connections between towed and towing motor vehicles or between the frame of a towed vehicle and the unsprung subframe of an adjustable axle of the motor vehicle if—

(1) The coiled tubing has a straight segment (pigtail) at each end that is at least 51 mm (2 inches) in length and is encased in a spring guard or similar device which prevents the tubing from kinking at the fitting at which it is attached to the vehicle; and

(2) The spring guard or similar device has at least 51 mm (2 inches) of closed coils or similar surface at its interface with the fitting and extends at least 38